

Syllabus

Course Number: CS468

Course Title: Advanced Unix

Course Description:

CS 468 – ADVANCED UNIX (3). Expands upon knowledge of UNIX systems. Introduces system administration tasks, including software installation, system configuration, and managing user accounts. Studies risks faced by computer systems and UNIX security mechanisms. Also explores UNIX system programming including signals and interprocess communication.

Expanded description:

Also introduces custom kernel compilation and current source control management concepts. Some of the security concepts for managing UNIX systems introduced are public key encryption, certificates, pluggable authentication module and Security-Enhanced Linux. Includes network device management and configuration. Concludes with an introduction of related technologies such as software packaging, virtualization, and containerization.

Prerequisite Courses:

CS465 – Unix Operating System

In order to successfully participate in this course, students are expected to have completed ALL of the course prerequisites. Please note that the pre-requisites for CS465 are CS210 and CS310 (or CS361 and CS362). Therefore, you need to have already completed all of these listed courses (or their equivalents) before taking CS468. Necessary skills from the above courses are:

1. Practice with problem definition, solution construction and algorithmic development, top-down design techniques, coding, and debugging (*CS210* or *CS361*).
2. Familiarity with control structures used for decisions and iteration, modular code design with functions, and proper parameter passing, using both pass-by-value and pass-by-reference (*CS210* or *CS361*).
3. Familiarity with basic data structures, including files, arrays and records (*CS310* or *CS362*).
4. Detailed understanding of the standard UNIX utilities, including vi, grep, awk, input and output redirection, and pipes (*CS465*).

5. Detailed understanding of the UNIX file system, user groups, and file system permissions (*CS465*).
6. Detailed understanding of the Bourne and Korn shells, including shell scripting with variables and control structures (*CS465*).
7. Basic understanding of the C/C++ programming tools in the UNIX environment, including cc, dbx, and make (*CS465*).
8. Basic understanding of system administration tasks on a UNIX system (*CS465*).

Course Overview

The pre-requisite course, CS465 Unix, covered Unix from a user's perspective. This course covers Unix system management and administration and performing Unix system programming.

Course Outcomes:

Upon completion of this course, learners should be able to:

- Detail the tasks performed by a UNIX system administrator.
- Install and configure a UNIX system.
- Manage UNIX users, file systems and devices using root powers.
- Access UNIX file management and process management functions via system calls.
- Configure a UNIX system for networking.
- Use UNIX security mechanisms to protect a UNIX system.

Course Materials:

Required Texts (available free online):

- López Sanchez-Montanes, J., Belles Ramos, S., Baig Vinas, R., & Auli Llinas, F. (2010). GNU/Linux basic operating system (2nd ed.). Barcelona, Spain: Eureka Media, SL. Retrieved from <http://ftacademy.org/sites/ftacademy.org/files/materials/fta-m2b-glbasic.pdf>
- Jorba Esteve, J. & Suppi Boldrito, R. (2009). GNU/Linux advanced administration (2nd ed.). Barcelona, Spain: Eureka Media, SL. Retrieved from http://ftacademy.org/sites/ftacademy.org/files/materials/fta-m2-admin_gnulinex-v1.pdf
- Chacon, S. & Straub, B. (2014). Pro Git (2nd ed.). New York, NY: Apress. <https://git-scm.com/book/en/v2>

Technology Tools:

- Access to a PC-compatible computer system, running Windows MobaXterm (preferred) or **ssh** applications loaded (for remote access to the Regis Unix server).

NOTE: You must have administrator privileges on this PC.

To get the most out of this course, it is recommended that you always keep one window open with a connection to the Regis Unix system. As you are reviewing the course content, try the command examples from the course/textbook in the Unix window. The more you can do on the actual Unix system while you are studying the course content, the better.

- PowerPoint or a PowerPoint viewer

Course content may be presented via PowerPoint slide shows. If you do not have PowerPoint software loaded on your PC, you can download the free PowerPoint viewer via the link below:

<http://www.microsoft.com/en-us/download/details.aspx?id=13>

College Policy about registering for the course during the drop/add period

If you added this course during the drop/add period, after class began on Monday, you are responsible for ***immediately*** notifying the instructor by email that you joined the course late. Be aware that none of the course due dates will be extended for you. Even if a due date already passed when you added the course, late points will still be deducted.

Pre-Assignment:

Sign on to worldclass.regis.edu and become familiar with the course navigation of the Web Curriculum.

Course Assignments and Activities:

	Topics	Readings (B in the Basic text, A in the Advanced text)	Activities Assignments and Associated Points
1	<ul style="list-style-type: none"> • System Admin Overview & Root Powers • Booting & Shutting Down Linux 	A: Module 1 and 2, all B: Module 1, section 1, 2 and 7 A: Module 5, section 2	Participation in Discussions - 10% for entire course Hmwk #1 - 8%
2	<ul style="list-style-type: none"> • Installing Linux • Managing Users 	A: Module 3, all A: Module 5, section 5 B: Module 1, section 3,4 and 5	Participation in Discussions Hmwk #2 - 8%
3	<ul style="list-style-type: none"> • Managing the File System • Systems Programming - File Management 	A: Module 5, sections 3, 4 and 7 A: Module 7, section 4 and 8	Participation in Discussions Hmwk #3 - 8%
4	<ul style="list-style-type: none"> • Managing Processes 	A: Module 4, all	Participation in Discussions Midterm Exam - 20%
5	<ul style="list-style-type: none"> • Systems Programming - Process Management 	A: Module 5, section 8 and 9	Participation in Discussions Hmwk #4 - 8%
6	<ul style="list-style-type: none"> • Managing Devices • Security 	A: Module 9, sections 1 through 8	Participation in Discussions Hwk #5 - 9%
7	<ul style="list-style-type: none"> • Networking 	A: Module 6, all	Participation in Discussions Hmwk #6 - 9%
8	<ul style="list-style-type: none"> • System Backup & System Logs 	A: Module 9, sections 9	Participation in Discussions Final Exam - 20%
		Total	100%

Summary of Assignments and Percentage Weight towards course grade

Assignment	Value (percent of overall course grade)
Homework Assignments (6)	
Homeworks 1-4 (8% each)	32 %
Homeworks 5-6 (9% each)	18 %
Homework Total	50 %
Midterm Exam	20 %
Final Exam	20 %
Participation/Forum	10 %
Totals	100 %

Course Policies and Procedures

Homework Assignments

Each homework assignment will cover concepts discussed in the book and class. The percentage of the grade allocated to each homework assignment is an indication of the relative effort required.

Exams

There will be a midterm exam and a final exam. Exam questions will be cumulative, taken from reading assignments and course content.

Discussion Participation

Class participation/effort is important because we can all learn from each other. Your participation points can make a difference in the final grade. Participation means:

1. Present in the forum every week
2. Regularly checks forum and posts all required items by the deadlines
3. Interacts/replies to other students in forum discussions.

Academic Integrity for Assignments in the Course

Plagiarism

Plagiarism includes submitting code or anything other assignment answers that were obtained from another person, a publication, or an internet web source.

Working together on assignments is NOT permitted.

All work submitted in CS468 must be completed on your own.

In cases of suspected cheating or plagiarism, the instructor will discuss the matter with the student(s) involved. The instructor reserves the right to question any student orally or in writing about any assignment, and to use the evaluation of the student's understanding of the assignment and of the submitted solution as evidence of cheating.

All cheating incidents will be reported to the Computer Science department and the Academic Integrity Board for possible further action.

Collusion

Additionally, it is violation of the Regis Academic Integrity Policy to do either of the following, either during the time you are taking the course or after course completion.

- Provide another student access to any of your completed assignments
- Upload or post any completed assignments to any website other than WorldClass

CC&IS Grading Scale

Letter Grade	Percentage	Grade Point
A	93 to 100	4.00
A–	90 to less than 93	3.67
B+	87 to less than 90	3.33
B	83 to less than 87	3.00
B–	80 to less than 83	2.67
C+	77 to less than 80	2.33
C	73 to less than 77	2.00
C–	70 to less than 73	1.67
D+	67 to less than 70	1.33
D	63 to less than 67	1.00
D-	60 to less than 63	.67
F	Less than 60	0

Additional information about grading can be found in the latest edition of the University Catalog, available at <http://www.regis.edu/Academics/Course%20Catalog.aspx>.

CC&IS Policies and Procedures

Each of the following CC&IS Policies & Procedures is incorporated here by reference. Students are expected to review this information each term, and agree to the policies and procedures as identified here and specified in the latest edition of the University Catalog, available at <http://www.regis.edu/Academics/Course%20Catalog.aspx> or at the link provided.

- The CC&IS Academic Integrity Policy.
- The Student Honor Code and Student Standards of Conduct.
- Incomplete Grade Policy, Pass / No Pass Grades, Grade Reports.
- The Information Privacy policy and FERPA. For more information regarding FERPA, visit the [U.S. Department of Education](http://www.ed.gov).
- The HIPAA policies for protected health information. The complete Regis University HIPAA Privacy & Security policy can be found here: <http://www.regis.edu/About-Regis-University/University-Offices-and-Services/Auxiliary-Business/HIPAA.aspx>.

- The Human Subjects Institutional Review Board (IRB) procedures. More information about the IRB and its processes can be found here: <http://regis.edu/Academics/Academic-Grants/Proposals/Regis-Information/IRB.aspx>.

The CC&IS Policies & Procedures Syllabus Addendum summarizes additional important policies including, Diversity, Equal Access, Disability Services, and Attendance & Participation that apply to every course offered by the College of Computer & Information Sciences at Regis University.

A copy of the CC&IS Policies & Procedures Syllabus Addendum can be found here: <https://in2.regis.edu/sites/ccis/policies/Repository/CCIS%20Syllabus%20Addendum.docx>.

